

REMARKS

I. Claims 1-18 are pending.

Claims 1-3 & 11-16 are amended herein.

Support for the amendments to claims 1-3 is found, for example, in Examples 8-10 in the specification. Support for the amendments to claims 11 and 12 is found, for example, in Examples 8-10 in the specification. The amendment to claim 13 is supported by the original claim 13. Support for the amendments to claim 14 is found, for example, in Examples 8-10 in the specification. The amendment to claim 15 is supported by the original claim 15. Support for the amendments to claim 16 is found, for example, at Example 3 in the specification.

II. Declaration

A corrected declaration has been submitted with this response. Accordingly, it is submitted that the Applicants have overcome the objection to the declaration.

III. Claim Objections

Claim 3 was objected to as being of improper dependent form. Applicants respectfully traverse this objection because the claim as amended recites a *mixture* of homozygous and heterozygous seeds for the secondary seeds. This is a further limitation on claim 1 from which it depends because claim 1 could be satisfied by, for example, secondary seeds that are entirely homozygous. Accordingly, Applicants respectfully request the Examiner to withdraw this objection.

IV. Claim rejection under 35 USC § 101

Claims 1-13 were rejected under § 101. The claims have now been amended to recite “transgenic plant variety” rather than “plant variety” to further emphasize the technological aspects of the invention. The claims now require primary seeds for a transgenic plant variety

with a genetically modified trait, indicating that naturally occurring examples of genetic variability in plants such as those found in Campbell and Takahasi et al. do not meet the limitations of the claims. Accordingly, it is submitted that the Applicants have overcome this rejection.

V. Claim rejections under § 112, First Paragraph

In response to the rejections of claims 14 and 15 under 35 U.S.C. § 112, first paragraph found on pages 3-5 of the Examiner's office action, the Applicant has amended claims 14 and 15.

Regarding the seed plant mixture, claim 14 now recites primary seeds with a first seed coat color genotype and secondary seeds comprised of seeds having one or more seed coat color genotypes different from the first seed coat color genotype and having one or more seed coat color differences from the dominant seed coat color. Moreover, claim 14 recites "wherein the seed coat color genotypes of the primary and secondary seeds present in the seed plant mixture are known so that the ratio of the seeds having at least one of the seed coat color differences from the dominant seed coat color in a seed sample of grain harvested from plants grown from the seed plant mixture can be predicted." Finally, the claim now explicitly recites the step of comparing the obtained ratio with the predicted ratio to identify seed with the genetically modified trait.

One would therefore need to know about the seed coat color genotypes present in the primary and secondary seeds to practice the invention because the claim as amended requires that one of ordinary skill could predict the ratio of at least one of the seed coat colors in a sample of seeds from plants grown from the seed plant mixture. Persons of ordinary skill in this art would understand that the limitations that the genotypes are "known" such that a resulting seed coat color can be "predicted" does not necessarily mean absolute knowledge and the ability to predict the exact ratio of a resulting seed coat color. Instead, persons of ordinary skill in the art appreciate that there is ordinarily a small amount of statistical variation in batches of seed

otherwise considered to be homogeneous and such persons can utilize the claimed methods even when that variation is present. Also, persons of ordinary skill in the art appreciate that the actual ratios of seed coat colors resulting from methods such as that of claim 14 may differ from the exact ratios predicted. Statistical models to accommodate for such variations are well known in the art.

The claims also now recite “determining the ratio of the seeds having at least one of the seed coat color differences from the dominant seed coat in the seed sample.” The Applicant notes that one would not need to have plants that will produce seeds at harvest that have the same seed coat color as the parent plant in order to “determine[e] the ratio of the seeds having at least one of the seed coat color differences from the dominant seed coat color in a seed sample.” The ratio of the marker can be determined by a number of techniques including visual seed sampling as described in the specification and the references it incorporates. In addition, the claimed invention can operate when the ratio of seeds with the different seed coat color changes from generation to generation. Finally, the invention can work as long as the progeny seeds have at least a threshold level of the color, and that threshold can be set by the grain elevator, as described in the specification.

In response to the rejection of claims 14-15 on pages 4-5, the Applicants note that the methods of the amended claims do not rely upon a situation where the progeny plants produce seeds with the same seed coat color as the parent plant. The invention of the amended claims will work in that situation, or as long as the progeny seeds have at least a threshold level of the marker color, or in other situations that one of skill in the art would understand in light of the teachings of the specification.

Because the seed coat color genotypes of the primary and secondary seeds present in the seed plant mixture must be known well enough to predict the ratio of the seeds having at least one of the seed coat color differences from the dominant seed coat color in a seed sample of grain harvested from plants grown from the seed plant mixture, the claimed invention can be used to identify seed that has the genetically modified trait by determining the ratio of the seeds

having at least one of the seed coat color differences from the dominant seed coat color in a seed sample. This is true even if subsequent generations of plant seeds do not exhibit the identical seed coat color as the parent plant seeds.

As the method requires the situation that the ratio of the seeds having at least one of the seed coat color differences from the dominant seed coat color in a seed sample of grain harvested from plants grown from the seed plant mixture can be predicted, that predicted ratio, when compared to the actual ratio obtained as a result of step v) of claim 14, is indicative of whether the seed can be identified as having the genetically modified trait. Thus, claim 14 as amended should overcome the Examiner's rejection on the basis that "the determining step in this claim relies upon the harvested grain exhibiting a predictable ratio of the phenotypical marker, which would not happen in every possible situation encompassed by the claim."

Claim 15 has been amended to use language consistent with that of amended claim 14, namely the language "a seed coat color different from the dominant seed coat color."

In response to the examiner's basis for rejecting claims 14 and 15 on the grounds that "the seed coat color of the seeds produced by the plants grown from the initial seeds planted in step 'ii' of the claim can be influenced by environmental factors," citing Takahasi, R. et al, the Applicant has submitted, pursuant to 37 C.F.R. § 1.132, the Declaration of Greg Penner along with this Response. In light of the comments in the Declaration of Greg Penner, the Applicant submits that this basis for rejecting claims 14 and 15 is overcome. In light of the amendments to claims 14 and 15, the Applicant respectfully submits that the other bases for the rejections of claims 14 and 15 under § 112 on pages 3-5 of the Examiner's office action are overcome.

In response to the rejections of claims 16-18 under 35 U.S.C. § 112, first paragraph, the Applicant has amended claim 16, from which claims 17 and 18 depend. Claim 16 now recites "soybean seed heterozygous for seed coat color" instead of "hybrid commercial soybean seed." The Applicant is of the view that the claim as amended better describes the soybean seed generated by the present invention. Examples 8-10 of the specification are illustrative of the

subject matter of claims 16-18. Accordingly, the Applicant submits that claims 16-18 as amended overcome this rejection.

In light of the amendments to claims 14-18, the Applicant respectfully submits that the rejections of these claims under 35 U.S.C. § 112, first paragraph, on pages 3-5 of the Examiner's office action are overcome.

VI. Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-15 are rejected under § 112, second paragraph, as being indefinite because seeds with phenotypical differences cannot be of the same variety as the Applicants have defined that term. In response, the Applicants have amended the claims to recite "secondary seeds compris[ing] seeds of one or more different plant varieties" rather than "secondary seeds of the same or a different plant variety." In light of this amendment, it is submitted that this rejection is overcome.

Claims 1-15 are rejected under § 112, second paragraph, as being indefinite because the claims do not indicate which seeds contain the proprietary traits. In response, the Applicants have amended the claims to recite "genetically modified trait" instead of "proprietary trait." In light of this amendment, it is submitted that this rejection is overcome.

Claim 1 is rejected for insufficient antecedent basis because it recites "the primary seed coat color" in the last sentence of the claim. The claim has been amended to recite "dominant seed coat color" instead, which has proper antecedent basis. Accordingly, this rejection is overcome.

Claims 4 and 5 are rejected as being indefinite on the basis that the Applicant does not specify what the phrase "wherein the plant" refers to in the part of claim 1 reciting primary seeds for a plant variety and secondary seeds for a plant variety. Claim 1 has been amended in response to provide that the primary and secondary seeds are "of the same plant species." Accordingly, this rejection is overcome.

Claim 14 was rejected for insufficient antecedent basis. In response, the Applicant has amended claim 14 to recite “a dominant seed coat color . . .” instead of “the dominant seed coat color . . .” Accordingly, this rejection is overcome.

VII. Claim Rejections Under 35 U.S.C. § 102

Claims 1, 3, 4, and 13 are rejected under 102(b) as being anticipated by Raque (‘349) and Raque (‘621) (collectively “the Raque references”). However, neither Raque reference teaches the elements of a seed mixture of primary seeds having a dominant seed coat color and secondary seeds comprising seeds having one or more seed coat color differences from the dominant seed coat color. These are elements of each of claims 1, 3, 4, and 13. They are neither literally present in the Raque references nor inherent in them. Thus, the Raque references cannot anticipate.

Claims 1 and 3 are rejected under 102(b) as being anticipated by Campbell. In response, the Applicants have amended the claims to recite “transgenic plant variety” rather than merely “plant variety” to further illustrate the technological aspects of their invention. Campbell does not disclose a seed mixture with primary seeds from a transgenic plant variety, and, therefore, cannot anticipate the claims as amended.

VIII. Claim Rejections Under 35 U.S.C. § 103

Claims 1-13 are rejected under § 103 as being unpatentable over either Raque (‘349) or Raque (‘621) in view of Wright et al. Neither Raque reference discloses, explicitly or inherently, the elements of a seed mixture of primary seeds having a dominant seed coat color and secondary seeds comprising seeds having one or more seed coat color differences from the dominant seed coat color. Wright et al. does not provide these missing elements. Moreover, the Raque references teach away from the present invention. The reason that they teach away from the present invention is that the Raque references refer to staining or dyeing the seed coat of phenotypically different foodplant seeds to have different colors from the principal seed

constituents, rather than mixing seeds having phenotypic differences in seed color, even though it refers to mixing seeds of plants with phenotypical differences in "leaf color or leaf variegation, . . . leaf or plant shape, . . . leaf size or plant growth height" Thus, one following the Raque references would physically stain or dye the seeds instead of mixing seeds of different natural colors as contemplated by the present invention. Thus, a combination of the Wright et al. reference and either or both of the Raque references still does not result in a teaching of every element of the present claims.

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In light of the above amendments and remarks, the Applicants respectfully submit that all outstanding objections and rejections are overcome.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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